

INDOOR AIR QUALITY ASSESSMENT

**Chicopee City Hall
17 Springfield St
Chicopee, Massachusetts**



Prepared by:
Massachusetts Department of Public Health
Center for Environmental Health
Emergency Response/Indoor Air Quality Program
April 2007

Background/Introduction

At the request of Lisa Sanders, Director of the Chicopee Health Department, the Massachusetts Department of Public Health (MDPH), Center for Environmental Health (CEH) provided assistance and consultation at the Chicopee City Hall (CCH), 17 Springfield Street, Chicopee, Massachusetts. Concerns about cancer and its potential association with environmental conditions at the CCH prompted the assessment.

On October 20, 2006, a visit to conduct an indoor air quality assessment was made by Michael Feeney, Director of CEH's Emergency Response/Indoor Air Quality (ER/IAQ), Program. Mr. Feeney was accompanied by Christine Gorwood, a Risk Communication Specialist in CEH's Community Assessment Program (CAP).

The original building is a two-story, red brick building constructed in 1872 (Cover Picture). An annex was added to the rear of the building in 1929 (address is 274 Front Street, Picture 1). The buildings are connected by two elevated walkways (Picture 2). The upper story of the 1872 building contains a large auditorium which is currently closed to the public (Picture 3). It appears that the auditorium shares the heating ventilating and air conditioning (HVAC) system with the 1929 wing, as evidenced by the presence of a large duct above the walkways shown in Picture 3. Windows are openable throughout the building.

Methods

Air tests for carbon dioxide, temperature and relative humidity were taken with the TSI, Q-Trak, IAQ Monitor, Model 8551. Screening for total volatile organic compounds (TVOCs) was conducted using a HNu Photo Ionization Detector (PID).

Results

The CCH has a staff of approximately 100 and can be visited by several hundred people each day. Tests were taken under normal operating conditions. Results appear in Tables 1 and 2.

Discussion

Ventilation

It can be seen from Tables 1 and 2 that carbon dioxide levels were below 800 parts per million (ppm) in all areas surveyed, indicating adequate air exchange. Ventilation for offices in the 1872 building is provided by an air-handling unit (AHU) located in a mechanical room in the basement. Fresh air for the building is drawn through vents located at ground level at the side of the building (Picture 4). Ventilation for offices in the 1929 building is provided by rooftop air-handling unit (AHU) (Picture 5).

To maximize air exchange, the MDPH recommends that both supply and exhaust ventilation operate continuously during periods of occupancy. In order to have proper ventilation with a mechanical supply and exhaust system, the systems must be balanced to provide an adequate amount of air to the interior of a room while removing stale air from the room. It is recommended that HVAC systems be re-balanced every five years to ensure adequate air systems function (SMACNA, 1994). The date of the last balancing of these systems was not available at the time of the assessment.

The Massachusetts Building Code requires a minimum ventilation rate of 20 cubic feet per minute (cfm) per occupant of fresh outside air or has openable windows in each room (SBBRS, 1997; BOCA, 1993). The ventilation must be on at all times that the room is

occupied. Providing adequate fresh air ventilation with open windows and maintaining the temperature in the comfort range during the cold weather season is impractical. Mechanical ventilation is usually required to provide adequate fresh air ventilation.

Carbon dioxide is not a problem in and of itself. It is used as an indicator of the adequacy of the fresh air ventilation. As carbon dioxide levels rise, it indicates that the ventilating system is malfunctioning or the design occupancy of the room is being exceeded. When this happens a buildup of common indoor air pollutants can occur, leading to discomfort or health complaints. The Occupational Safety and Health Administration (OSHA) standard for carbon dioxide is 5,000 parts per million parts of air (ppm). Workers may be exposed to this level for 40 hours/week, based on a time-weighted average (OSHA, 1997).

The Department of Public Health uses a guideline of 800 ppm for publicly occupied buildings. A guideline of 600 ppm or less is preferred in schools due to the fact that the majority of occupants are young and considered to be a more sensitive population in the evaluation of environmental health status. Inadequate ventilation and/or elevated temperatures are major causes of complaints such as respiratory, eye, nose and throat irritation, lethargy and headaches. For more information concerning carbon dioxide, please see [Appendix A](#).

Temperature readings on the day of the assessment ranged from 69° F to 74° F, which were within or very close to the lower end of the MDPH recommended comfort guidelines. The MDPH recommends that indoor air temperatures be maintained in a range of 70° F to 78° F in order to provide for the comfort of building occupants. In many cases concerning indoor air quality, fluctuations of temperature in occupied spaces are typically experienced, even in a

building with an adequate fresh air supply. In one area, the thermostat for the room was deactivated, making temperature control difficult.

Relative humidity readings on the day of the assessment ranged from 55 to 73 percent, which were above the MDPH recommended comfort range¹. The MDPH recommends a comfort range of 40 to 60 percent for indoor air relative humidity. Relative humidity in the building would be expected to drop during the winter months due to heating. The sensation of dryness and irritation is common in a low relative humidity environment. Low relative humidity is a common problem during the heating season in the northeast part of the United States.

Microbial/Moisture Concerns

In order for building materials to support mold growth, a source of moisture is necessary. No active leaks were observed, however, water damage was noted on ceiling tiles in the employee break room. The US Environmental Protection Agency and the American Conference of Governmental Industrial Hygienists (ACGIH) recommend that porous materials (e.g. carpeting) be dried with fans and heating within 24 to 48 hours of becoming wet (US EPA, 2001; ACGIH, 1989). If porous materials are not dried within this time frame, mold growth may occur. Once mold has colonized porous materials, they are difficult to clean and should be removed.

Plants were observed in several areas. Plants, soil and drip pans can serve as sources of mold growth, thus should be properly maintained. Over-watering of plants should be avoided and drip pans should be inspected periodically for mold growth. A few areas had

¹ The outdoor relative humidity measured on this date was 79 percent, which indicates increased fresh air supply since all levels of carbon dioxide measured were below 800 ppm.

water coolers installed over carpeting. Water spillage or overflow of catch basins can result in the wetting of the carpet. Repeated wetting of the carpet can result in mold growth. A few areas had water coolers installed over carpeting. Water spillage or overflow of catch basins can result in the wetting of the carpet and subsequent mold/moisture problems.

Other Concerns

In order to determine whether an unusual source of chemicals was present within the CCH, air sampling for the presence of materials containing volatile organic compounds (VOCs) was conducted. VOCs are substances that have the ability to evaporate at room temperature. Frequently, exposure to low levels of total VOCs (TVOCs) may produce eye, nose, throat and/or respiratory irritation in some sensitive individuals. CEH staff conducted TVOC sampling in offices and all common areas (Tables 1 and 2). Outdoor measurements were taken for comparison. In addition, TVOC screening was also conducted around the basement floor where the 1872 building AHU is located. All outdoor TVOC concentrations were non-detect or ND (Tables 1 and 2). Indoor TVOC concentrations throughout the building were also ND.

Several other conditions that can affect indoor air quality were noted during the assessment. Of note is the location of the fresh air supply vent for the 1872 building near ground level on Front Street (Picture 4). In this configuration, idling vehicles can produce vehicle exhaust that can be drawn into the CCH. M.G.L. chapter 90 section 16A prohibits the unnecessary operation of the engine of a motor vehicle for a foreseeable time in excess of five minutes (MGL, 1986).

Building staff reported the presence of debris on a desk. Above the desk was a hole in the suspended ceiling created by a missing ceiling tile, which can provide a pathway for the

movement of drafts, dusts, odors and particulate matter into occupied areas. Suspended ceiling systems should be complete and intact.

Occupants expressed concerns regarding the possible presence of asbestos containing materials (ACM) in the crawlspace beneath the Annex building. MDPH staff did not have access to this area at the time of the assessment. Intact asbestos-containing materials (ACM) do not pose a health hazard. If damaged, ACM can be rendered friable and become aerosolized. Where ACM are found damaged, these materials should be removed or remediated in a manner consistent with Massachusetts asbestos remediation laws (MDLI, 1993).

Health Concerns

As described above, in September 2006 the Center for Environmental Health (CEH) received a report of cancer concerns at the City Hall office in Chicopee. To address these concerns, during the October 20th inspection, an environmental analyst/risk communication specialist in CEH's Community Assessment Program (CAP) met individually with any City Hall employee who wished to share their concerns about the occurrence of cancer in City Hall employees. The information shared by City Hall employees is required to be treated as confidential by CAP staff, under both state and federal regulations.

Staff in the City Hall office supplied the names and phone numbers of ten staff members who had been diagnosed with cancer. Although the name and phone number was provided for an additional eight individuals who reportedly received abnormal mammogram results, it is not possible to draw any conclusions about the health status of these individuals. Abnormal mammograms may require follow-up but often do not result in a diagnosis of

breast cancer. CAP staff reviewed the most recent data available from the Massachusetts Cancer Registry (MCR) to confirm the cancer diagnoses reported among Chicopee City Hall employees and to determine whether these diagnoses may represent an unusual pattern of cancer incidence.

The MCR, a division within the MDPH Center for Health Information, Statistics, Research and Evaluation, is a population-based surveillance system that has been monitoring cancer incidence in the Commonwealth since 1982. All new diagnoses of invasive cancer, along with several types of in situ (localized) cancer, occurring among Massachusetts residents are required by law to be reported to the MCR within six months of the date of diagnosis (M.G.L. c.111. s 111b). This information is collected and kept in a confidential database. Data are collected on a daily basis and reviewed for accuracy and completeness on an annual basis. This process corrects misclassification of data (i.e., city/town misclassification) and deletes duplicate case reports.

CAP staff were able to confirm cancer diagnoses for eight of the ten individuals through the MCR². The eight individuals were diagnosed with four different types of cancer (breast, bladder, prostate and lung cancer). Three of the cancer types (breast, prostate and lung cancer) diagnosed among City Hall employees are among the most commonly diagnosed cancers among residents in Massachusetts and in the U.S. as a whole. Although some of these four different cancer types share some common risk factors related to their development (e.g., cigarette smoking is linked to both bladder and lung cancer), each cancer type is a unique disease with its own set of risk factors.

² MCR data may not include individuals who were recently diagnosed with cancer, who were diagnosed with cancer outside of Massachusetts, or who were diagnosed with a non-cancerous (benign) tumor.

Among the eight employees, no atypical pattern of any one cancer type was noted. The types of cancer diagnosed were not unusual nor were the numbers of individuals diagnosed with similar cancer types unusual. Five of the eight staff members were diagnosed within the last seven years and the remaining three individuals were diagnosed between 1995 and 1999. There did not appear to be a temporal trend; the year of diagnosis varied among the eight individuals.

As a woman ages, her risk of getting *breast cancer* increases. Nationally, seventy-eight percent of women diagnosed with invasive breast cancer are 50 years of age or older at the time of their diagnosis (ACS, 2006a). In the Chicopee City Hall, eighty percent of the individuals diagnosed with breast cancer were 50 years of age or older at the time of their diagnosis. Additionally, it is known that a woman's risk of developing breast cancer can change over time due to many factors, some of which are dependent upon well-established risk factors for this cancer type. Females with a family history of breast cancer, those who have never had children, or have had their first child after the age of 30, are at an increased risk for developing this disease (ACS, 2006a). Females who take menopausal hormone therapy (estrogen plus progestin) for five or more years after menopause also appear to have an increased risk of developing breast cancer (National Cancer Institute, 2006). Information related to family history of breast cancer, lifestyle factors (e.g., obesity, diet, and physical activity), reproductive factors, and use of hormone replacement therapy after menopause is not included in the MCR database.

Despite the vast number of studies on the causes of breast cancer, known risk factors are estimated to account for slightly less than half of all diagnoses in the general population (Madigan et al., 1995). Researchers are continuing to examine potential genetic, hormonal,

and environmental risk factors for breast cancer. Occupational and environmental exposures, such as exposure to polychlorinated biphenyls (PCBs), chlorinated hydrocarbon pesticides (DDT and DDE), and other endocrine-disrupting chemicals, have been suggested to increase a woman's risk for breast cancer. Because these compounds affect the body's estrogen production and metabolism, they may contribute to the development and growth of breast tumors (Davis et al, 1997; Holford et al, 2000; Laden and Hunter, 1998). However, studies on these associations have yielded inconsistent results and follow-up studies are ongoing to further investigate possible causal relationships (Safe, 2000).

Risk factors associated with *prostate cancer* include family history as well as lifestyle-related risk factors. Prostate cancer seems to run in some families; having a father or brother with prostate cancer more than doubles a man's risk of developing prostate cancer. (The risk is higher for men with an affected brother than for those with an affected father.) Also, the risk is much higher for men with several affected relatives, particularly if their relatives were young at the time the cancer was diagnosed. Lifestyle-related risk factors associated with prostate cancer include diet and a sedentary lifestyle. Prostate cancer occurs more often in African American men than in white American or Hispanic American men. The reasons for the racial differences are not clear (ACS, 2006b).

The major risk factor for *lung cancer* is cigarette smoking. Approximately 87% of lung cancers are estimated to be caused by smoking and some of the remaining 13% are estimated to be caused by passive exposure to tobacco smoke (ACS, 2006c). Other factors that increase an individual's risk for developing lung cancer are exposure to radon, asbestos, or air pollution. The use of marijuana is also thought to increase one's risk of developing lung cancer because marijuana contains more tar than cigarettes. Occupational exposures that

have been linked to lung cancer are exposures to radioactive ores such as uranium or the inhalation of chemicals such as vinyl chloride, nickel chromates, coal products and mustard gas (ACS, 2006c).

Bladder cancer is strongly associated with a history of cigarette smoking. Smokers are more than twice as likely to develop bladder cancer compared to nonsmokers (ACS, 2006d). Additionally, white males have the highest prevalence of bladder cancer across all racial groups. A male to female ratio of four to one has been observed among whites, while a slightly lower male to female ratio of three to one has been observed among most other racial groups. Further, the occurrence of bladder cancer rises with increasing age (ACS, 2006d).

Some specific industrial chemicals have been linked to bladder cancer. Occupational exposure to aromatic amines, such as benzidine and beta-naphthylamine, increases the risk of bladder cancer (ACS, 2006d). These chemicals were common in the dye industry in the past. A higher risk of bladder cancer has also been observed among aromatic amine manufacturing workers as well as among workers in the rubber, leather, textiles, printing, and paint products industries (ACS, 2006d; Silverman et al. 1996). Further, smokers who work with the cancer-causing chemicals noted above have an increased risk of developing bladder cancer (ACS, 2006d).

Although it is not possible to determine what may have caused any one person's cancer, the length of time in which an individual works in a particular building, as well as the type of work performed, is important in evaluating potential exposures associated with their workplace. Cancer in general has a long period of development or latency period (i.e., the interval between first exposure to a disease-causing agent and the appearance of symptoms of the disease (Last, 1995)) that can range from 10 to 30 years and in some cases may be more

than 40 to 50 years for solid tumors (Bang, 1996; Frumkin, 1995). Because of this, past exposures are frequently more important than current exposures as potential risk factors for cancers. Interviews were conducted for six of the eight individuals with a confirmed cancer diagnosis. Three of the six individuals worked at Chicopee Town Hall for 15 years or less, two worked there for 16 to 20 years, and one worked there for more than 25 years.

According to American Cancer Society statistics, cancer is the second leading cause of death in Massachusetts and the United States. Not only will one out of three people develop cancer in their lifetime, but cancer will affect three out of every four families. For this reason, cancers often appear to occur in “clusters,” and it is understandable that people may perceive that there are an unusually high number of cancer cases in their workplace, surrounding neighborhoods, or towns. Upon close examination, many of these “clusters” are not unusual increases, as first thought, but are related to such factors as local population density, variations in reporting, or chance fluctuations in occurrence. In other instances, the “cluster” in question includes a high concentration of individuals who possess related behaviors or risk factors for cancer. Some concentrations of disease, however, are unusual; that is, they represent a true excess of cancer in a workplace, a community, or among a subgroup of people. A suspected cluster is more likely to be a true cancer cluster if it involves a large number of cases of one type of cancer diagnosed in a relatively short time period rather than several different types diagnosed over a long period of time (i.e., 20 years), a rare type of cancer rather than common types, and/or a large number of cases diagnosed among individuals in age groups not usually affected by that cancer. These types of clusters may warrant further public health investigation.

In addition to concerns about cancer, several employees at Chicopee City Hall had other health complaints. Four individuals mentioned an increased frequency of upper respiratory infections and symptoms associated with respiratory conditions such as sneezing, coughing, wheezing, watery eyes, and increased phlegm. These types of irritant health effects are commonly associated with or affected by more typical indoor air quality problems (i.e., lack of adequate fresh air, mold/moisture problems, dust, and particulate matter in the indoor environment). Dust around the vents, mold in the drip trays of plants, and overall increased carbon dioxide levels in the building may be related to some of these health complaints.

Based upon our review of the available diagnosis information, as well as the most current cancer literature, there does not appear to be an atypical pattern of cancer diagnoses among employees of the Chicopee City Hall. That is, it does not appear that a common factor (either environmental or non-environmental) is likely related to the diagnoses of cancers among these individuals. Among the eight individuals whose diagnosis was confirmed in the MCR, there were four different cancer types identified indicating the lack of an atypical pattern of any one cancer type. While potential indoor air quality problems have been identified in this office, these issues are not likely to be related to the incidence of cancer among employees at the Chicopee City Hall, but probably have contributed to the common symptoms associated with poor indoor air quality (e.g., headaches, upper respiratory problems and allergies).

Conclusions/Recommendations

Based on the observation made during the assessment, the following recommendations are made.

1. Ensure leaks are repaired and replace water damaged ceiling tiles in the break room.
Examine the area above and around these areas for mold growth. Disinfect areas of water leaks with an appropriate antimicrobial.
2. Replace missing ceiling tile.
3. For buildings in New England, periods of low relative humidity during the winter are often unavoidable. Therefore, scrupulous cleaning practices should be adopted to minimize common indoor air contaminants whose irritant effects can be enhanced when the relative humidity is low. To control for dusts, a high efficiency particulate arrestance (HEPA) filter equipped vacuum cleaner in conjunction with wet wiping of all surfaces is recommended. Drinking water during the day can help ease some symptoms associated with a dry environment (throat and sinus irritations).
4. Place rubber/plastic matting beneath water coolers to prevent water damage to carpeting. Clean and disinfect reservoir periodically to prevent mold/bacterial growth.
5. Avoid over watering of plants. Ensure flat surfaces around plants are free of potting soil and other plant debris. Examine drip pans periodically for mold growth and disinfect with an appropriate antimicrobial where necessary.
6. Consider prohibiting parking in the general areas of AHU air intakes to minimize/prevent vehicle exhaust entrainment. If not, feasible consider posting signs instructing occupants/visitors not to back into parking spots and to cease idling after 5 minutes as per M.G.L. chapter 90 section 16A.

7. Contact the Massachusetts Department of Labor and Workforce Development, Division of Occupational Safety (DOS), Asbestos Program and/or a licensed asbestos abatement contractor to identify and remediate potential asbestos issues in the crawlspace in conformance with all applicable Massachusetts asbestos abatement and hazardous materials disposal laws.
8. For further building-wide evaluations and advice on maintaining public buildings, see the resource manual and other related indoor air quality documents located on the MDPH's website at http://mass.gov/dph/indoor_air.

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Picture 1



1929 Annex (Address Is 274 Front Street)

Picture 2



**Elevated Walkways, Note HVAC Vent Ductwork above the Uppermost Walkway
(Arrow)**

Picture 3



1872 Building Auditorium

Picture 4



Fresh Air Supply, 1872 Wing

Picture 5



1929 Rooftop AHU

Location: Chicopee City Hall

Address: 17 Springfield St, Chicopee, MA

Indoor Air Results

Date: 10/20/2006

Table 1

Location	Carbon Dioxide (ppm)	TVOC (ppm)	Temp (°F)	Relative Humidity (%)	Occupants in Room	Windows Openable	Ventilation		Remarks
							Supply	Exhaust	
Outside (Background)	384	ND	65	79					Rain, cloudy
Auditorium	460	ND	59	0	0	Y	Y	Y	Repaired water damage plaster
Mayor's office reception	562	ND	72	67	2	Y	Y	Y	Photocopier Window open
Mayor's office private office	487	ND	72	69	1	Y	Y	Y	Door open
Maintenance	492	ND	74	60	0	Y	Y	Y	
Maintenance private office	490	ND	74	58	0	Y	Y	Y	Door open
Aldermen chamber	601	ND	71	58	0	Y	Y	Y	Supply off Exhaust off
26	501	ND	72	65	2	Y	Y	Y	Water damaged carpet Plants
26 private office north	478	ND	72	65	0	Y	Y	Y	Door open
26 private office east	501	ND	72	65	0	Y	Y	Y	Water cooler on carpet Photocopier Refrigerator
27	492	ND	72	65	2	Y	Y	Y	Plants Door open
27 private office north	537	ND	72	65	2	Y	Y	Y	Plants

ppm = parts per million

Comfort Guidelines

Carbon Dioxide: < 600 ppm = preferred
 600 - 800 ppm = acceptable
 > 800 ppm = indicative of ventilation problems

Temperature: 70 - 78 °F
 Relative Humidity: 40 - 60%

Location: Chicopee City Hall

Address: 17 Springfield St, Chicopee, MA

Indoor Air Results

Date: 10/20/2006

Table 1 (continued)

Location	Carbon Dioxide (ppm)	TVOC (ppm)	Temp (°F)	Relative Humidity (%)	Occupants in Room	Windows Openable	Ventilation		Remarks
							Supply	Exhaust	
27 private office east	479	ND	72	64	0	N	Y	y	Water cooler on carpet Photocopier Refrigerator

ppm = parts per million

ND = non-detectable

Comfort Guidelines

Carbon Dioxide: < 600 ppm = preferred
600 - 800 ppm = acceptable
> 800 ppm = indicative of ventilation problems

Temperature: 70 - 78 °F
Relative Humidity: 40 - 60%

Location: Chicopee City Hall Annex

Address: 17 Springfield St, Chicopee, MA

Indoor Air Results

Date: 10/20/2006

Table 2

Location	Carbon Dioxide (ppm)	TVOC (ppm)	Temp (°F)	Relative Humidity (%)	Occupants in Room	Windows Openable	Ventilation		Remarks
							Supply	Exhaust	
Outside (Background)	384	ND	65	79					Rain, cloudy
Attic	496	ND	70	61	0	N	N	N	
Employee lounge	488	ND	72	65	2	y	y	y	2 water damaged ceiling tile Plants Door open
Auditor main office	625	ND	73	60	3	y	y	y	Plants
Auditor private office	690	ND	74	58	1	y	y	y	Report of debris on desk 1 missing ceiling tile
Auditor conference room	662	ND	74	58	0	y	Y	y	Plants Water cooler on carpet
Auditor vault	640	ND	74	55	0	N	N	N	Door open
Auditor private office northeast	666	ND	74	60	3	y	y	N	
MIS tech	526	ND	73	56	0	y	y	y	Door open
MIS Munis	509	ND	72	57	1	y	y	N	Dry erase board Water cooler on carpet Door open
MIS private office	487	ND	72	58	1	y	y	N	

ppm = parts per million

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Temperature: 70 - 78 °F
Relative Humidity: 40 - 60%

Location: Chicopee City Hall Annex

Indoor Air Results

Address: 17 Springfield St, Chicopee, MA

Table 2 (continued)

Date: 10/20/2006

Location	Carbon Dioxide (ppm)	TVOC (ppm)	Temp (°F)	Relative Humidity (%)	Occupants in Room	Windows Openable	Ventilation		Remarks
							Supply	Exhaust	
City collector	488	ND	72	60	4	Y	y	Y	Dry erase board Plants Water cooler on carpet
City collector Private office west	512	ND	72	62	0	Y	Y	N	
City collector Break room	540	ND	73	64	0	Y	Y	Y	Refrigerator Stove
Treasurer main office	491	ND	74	62	4	Y	Y	Y	Plants Photocopier Water cooler on carpet
Treasurer private office	480	ND	74	62	0	Y	Y	Y	Plants Dry erase board
Treasurer break room	510	ND	74	61	0	Y	N	N	Stove
Purchasing main office	509	ND	73	61	2	Y	Y	Y	Plants
Purchasing private office	497	ND	73	62	1	Y	Y	Y	Photocopier Door open
Retirement main office	473	ND	73	62	1	Y	Y	Y	Plants Photocopier Water cooler on carpet
Board of assessors Main office	535	ND	73	64	4	Y	Y	Y	Door open Water cooler on carpet

ppm = parts per million

ND = non-detectable

Comfort Guidelines

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Temperature: 70 - 78 °F
 Relative Humidity: 40 - 60%

Location: Chicopee City Hall Annex

Indoor Air Results

Address: 17 Springfield St, Chicopee, MA

Table 2 (continued)

Date: 10/20/2006

Location	Carbon Dioxide (ppm)	TVOC (ppm)	Temp (°F)	Relative Humidity (%)	Occupants in Room	Windows Openable	Ventilation		Remarks
							Supply	Exhaust	
Board of assessors Private office west	492	ND	73	63	1	Y	Y	Y	Dry erase board Door open
Board of assessors Private office southwest	528	ND	72	65	1	Y	Y	Y	Door open
Building department main office	465	ND	73	64	1	Y	Y	Y	
Board of alderman	454	ND	72	65	2	Y	Y	Y	Plants Water cooler on carpet
Board of alderman Break room	456	ND	72	65	0	Y	Y	Y	Microwave open
Registrar of Voters	491	ND	72	66	1	Y	Y	Y	
City Clerk	533	ND	69	66	3	Y	Y	Y	
License/Law Office	530	ND	71	71	1	Y	Y	Y	Water cooler on carpet
Law private office west	540	ND	71	73	1	Y	Y	Y	Door open
Law private office east	505	ND	71	71	0	Y	Y	N	Door open
Conference room	433	ND	72	66	0	Y	Y	Y	

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 Relative Humidity: 40 - 60%